



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,617	03/07/2007	Peter Back Knudsen	006921.00015	4838
22507	7590	05/22/2009	EXAMINER	
BANNER & WITCOFF, LTD. 1100 13th STREET, N.W. SUITE 1200 WASHINGTON, DC 20005-4051			PEACE, RHONDA S	
ART UNIT	PAPER NUMBER	2874		
MAIL DATE		DELIVERY MODE		
05/22/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,617	Applicant(s) KNUDSEN, PETER BACK
	Examiner Rhonda S. Peace	Art Unit 2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 23 April 2009.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-19 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 05 June 2006 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/0256/06)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
 6) Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/23/2009 has been entered.

Response to Arguments

Applicant's arguments, see pages 6-7, filed 4/23/2009, with respect to the rejection(s) of claim(s) 1, 2, 5, 6, 8, 11, 13, 15, and 17 under 35 U.S.C. 102(b) in view of Tiao et al (US 6,318,863), the rejection of claims 3, 7, 12, 14, 16, 18, and 19 under 35 U.S.C. 103(a) in view of Tiao et al, the rejection of claim 9 under 35 U.S.C. 103(a) in view of Tiao et al and Tsutsui et al (US 2001/0030571), and the rejection of claims 4 and 10 under 35 U.S.C. 103(a) in view of Tiao et al and Bassous et al (US 4,077,464) have been fully considered and are persuasive, as Tiao et al fails to disclose an arrangement wherein the light within the plate travels substantially parallel to the displaying surface of the light transmissive display. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made at least in partial view of Tai et al (US 5,359,691) under 35 U.S.C. 103(a) and in view of Tai et al alone under 35 U.S.C. 102(b) as detailed below, where Tai et al teaches an edge-lit LCD display device.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 8, 15, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4 and 15 recite, "where adjacent parts of two adjacent tapered light guides are defined by a rounded shape," and therefore require at least two tapered light guides. However, claims 1 and 11, from which claims 4 and 15 respectively depend, only require "one or more tapered light guides." For purposes of examination, it is presumed each of claims 4 and 15 require at least two tapered light pipes. The Examiner suggests, for example, claim 4 be changed to recite, "where the one or more tapered light guides comprises two or more tapered light guides, and where adjacent parts of two adjacent tapered light pipes are defined by a rounded shape," to correct this issue and clearly define the current invention.

Claims 8 and 19 recite, "wherein a distance exists between the light emitters exceeding 25% of the predetermined length," thereby requiring at least two light emitters such that a distance is measured between them. However, claims 1 and 11, from which claims 8 and 19 respectively depend, only require, "one or more light emitters." For purposes of examination, it is presumed claims 8 and 19 each require at least two light emitters. The Examiner suggests similar changes as described above, such that both claims 8 and 19 further require, "wherein the one or more light emitters

Art Unit: 2874

comprises two or more light emitters" to correct this issue and clearly define the current invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5-8, 11, 13, 14, and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiao et al (US 6,318,863) in view of Tai et al (US 5,359,691).

Pertaining to claims 1 and 11, Tiao et al discloses a display and a method of forming said display comprising a light transmissive display 230, a plurality of light emitters 202, a light guiding plate 220 overlapping and being substantially parallel to the light transmissive display 230, and a plurality of tapered light guides 212 each extending between said plate 220 and said emitters 202. See col. 3 lines 7-31. The tapered light guides 212 are each adapted to direct light from an emitter 202 in said plurality of

emitters to the said plate 220. The plate acts to guide the light received from said tapered guides 212 and guides light parallel to said transmissive display 230 such that the light is received by and directed through said transmissive display 230. See col. 3 lines 31-47. The light transmissive display 230 and plate 220 at least partially overlap one another, as shown in Figure 2A.

Further pertaining to claims 1 and 11, while Tiao et al discloses the display as described above, Tiao et al does not disclose an arrangement wherein the plate guides the received light in a direction parallel to a plane of a displaying surface of the light transmissive display, or in other words, Tiao et al fails to disclose an edge-lit plate and instead discloses a back-lit plate where the light sources at least partially overlap both the plate and the light transmissive display.

As described above, Tai et al discloses a backlighting system for a liquid crystal flat panel display a method of forming an apparatus as seen in Figure 1 comprising: providing a light transmissive display 12, providing a light transmissive plate 14 so as to overlap with and be substantially parallel with the light transmissive display 12, providing one or more light emitters 64 and 64' adapted to emit light into the light transmissive plate 12, the light 30 and 30' received substantially parallel to a plane of a displaying surface of the light transmissive display 12, and providing one or more tapered light guides 28 and 28' between the one or more light emitters 64 and 64' and the light transmissive plate 14. See Tai: Figure 1, col. 4 lines 27-41, and col. 5 lines 43-50. As seen in Figure 1 of Tai et al, the light sources 64 and 64' act to provide an edge-lit plate 14.

In conclusion with respect to claim 1 and 11, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the above teachings of Tiao et al and Tai et al, thereby orientating the light sources and tapered light guides of Tiao et al such that said sources, guides, and the plate form an edge-lit backlighting device, where the plate guides the received light in a direction parallel to a plane of a displaying surface of the light transmissive display, as Tai et al discloses that such an edge-displays are more compact than the backlight as taught by Tiao et al, and due to their compact nature and ability to provide high intensity light and controllable collimation, are useable in stacked panel displays, colored displays in portable computers, as well as real time flat displays. See Tai et al, col. 2 lines 1-7.

Concerning claims 2, 5, 6, and 8, Tiao et al in view of Tai et al disclose the display and method as described above. Moreover, Tiao et al discloses the tapered light guides 212 extend along the entire length of side 220a of plate 220 and couple light from the emitters 202 through the side 220a of plate 220. See Tiao et al, col. 3 lines 41-47. The emitters 202 have a maximum size that is significantly smaller than the plate 220, as seen in Figure 2. The plate 220 has a side 220b facing the transmissive display and being the same area as the transmissive display. See Tiao et al, col. 3 lines 46-47. As seen in Figure 2 of Tiao et al, the distance between the upper-most emitter 202 and the bottom-most emitter 202 is approximately equal to the length of side 202b. Array 200, comprising emitters 202 and their corresponding electrical elements, is partially positioned between the emitters 202 and the guides 212, as seen in Figure 2 of Tiao et al.

Addressing claims 13 and 17, Tiao et al in view of Tai et al disclose the display and method as described above. Moreover, Tiao et al discloses the tapered guides 212 are adapted to introduce light into a predetermined side 220a of the plate 220, and the light guides 212 together extend along the substantial entirety of the length of side 220a, as seen in Figure 2A. As is apparent from the Figure 2A of Tiao et al, each light emitter 202 has a largest physical dimension (for example, diameter) that is significantly lower than the largest physical dimension (for example, the length of side 220a) of the plate 220.

Concerning claim 3, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose the light guides being a single, monolithic element. Nonetheless it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the tapered guides as a single, monolithic element such that said guides are integral, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Pertaining to claim 7, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose the device comprising at most ten emitters. Nonetheless, it would have been obvious to one of ordinary skill in the art to include at most ten emitters in the device of Tiao et al in order to avoid excessive illumination. Moreover, it has been held that discovering an optimum value (such as ten) of a result effective variable (such as

the number of emitters included in a device) involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Addressing claim 16, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose positioning an electrical element between the tapered portion of the plate and the light emitters, or more specifically between the taper light guides and the light emitters. However, the disclosed types of light sources in Tiao et al, such as LEDs, OLEDs, laser diodes, etc, all require additional electrical elements, for example, to provide electrical power and/or control signals to the light emitter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to position an electrical element between the taper light guides and the light emitters, to provide the required electrical power and/or control signals to the light emitters.

Concerning claim 14, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose forming the light guides as a single monolithic element. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the light guides as a single monolithic element as it has been held that forming in one piece an article which has formerly been formed in multiple pieces involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Addressing claim 18, Tiao et al in view of Tai et al disclose the display and method as described above. Note also that Tiao et al discloses four light emitters,

which is less than the "at most ten emitters" as recited in the claim. However, the combination of Tiao et al and Tai et al does not disclose the step of providing one or more light emitters comprises providing at most ten light emitters, i.e. Tiao et al does not disclose always using ten or less emitters. Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device as having at most ten light emitters, thereby providing ample light for lighting the display, while avoiding excessive illumination that is capable of causing deterioration of the display's image. In the very least, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device as having at most ten light emitters, as a person of ordinary skill has good reason to pursue the technical options within their grasp, such as the proper amount of illumination required for a display. If this leads to the anticipated success, it is likely the product not of innovation, but of ordinary skill and common sense. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007).

Pertaining to claim 19, Tiao et al in view of Tai et al disclose the display and method as described above. Moreover, Tiao et al also discloses the display 230 and the plate 220 are positioned to face one another along the plate's side 220b, wherein side 220b has a surface area substantially equal to the surface of the display 230. See Tiao et al, col. 3 lines 45-47. However, the combination of Tiao et al and Tai et al does not disclose the distance between the light emitters as exceeding 25% of the length of the predetermined side (side 220a) of the plate. Tiao et al does, however, disclose an embodiment wherein such an arrangement is possible, wherein only two emitters are

provided, wherein the two emitters couple light into the plate via two light guide pipes. In this instance, the light emitters would be spaced at a distance exceeding 25% of side 220a of the plate, as the sides 212b of the guides 212 must cover the entirety of side 220a of the pipe 220. See col. 11 lines 56-64. Therefore, it would have been obvious to one of ordinary skill in the art to form the device such that the distance between the light emitters as exceeding 25% of the length of the predetermined side of the plate, as this is one of the many possible arrangements described by Tiao et al, and a person of ordinary skill has good reason to pursue the technical options within their grasp, such as the proper amount of illumination required for a display. If this leads to the anticipated success, it is likely the product not of innovation, but of ordinary skill and common sense. *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tiao et al (US 6,318,863) in view of Tai et al (US 5,359,691), in further view of Tsutsui et al (US 2001/0030571A1).

With regard to claim 9, Tiao et al and Tai et al discloses the device as described above, wherein Tai discloses the LCD device is suitable for a colored display in a computer. See Tai et al, col. 2 lines 1-7. Also, Tiao et al does disclose the above device as suitable for an LCD display. See Tiao et al, col. 2 lines 15-21. However, the combination of Tiao et al and Tai et al does not directly disclose the above device as being used within a mobile phone. Tsutsui et al discloses an LCD used within a mobile phone as a display panel. See ¶ 0031. Therefore, it would have been obvious to one of ordinary skill in the art to utilize the above device in a mobile phone, as this increases

the functionality and marketability of the device, as said device is usable in more applications.

Claims 4, 10, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tiao et al (US 6,318,863) in view of Tai et al (US 5,359,691), in further view of Bassous et al (US 4,007,464).

Pertaining to claim 10, Tiao et al in view of Tai et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al does not disclose wherein the step of providing the plate comprises removing tapered portions of the plate so as to provide a tapered part of the plate between each group of one or more said light guides and the portion of the plate overlapping said transmissive display. In other words, Tiao et al discloses light guides 212 are formed separately from plate 220, and therefore Tiao et al does not disclose forming said guides and plate as an integral material, wherein the tapered portions of the guides are formed by a process which removes a portion of the material forming the guides and plate, such as etching or patterning. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the tapered guides 212 and plate 220 of the same material such that guides 212 and plate 202 are integral, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

Further pertaining to claim 10, Bassous et al discloses a silicon substrate in which a tapered recess is formed in said substrate with an etching process, thereby

Art Unit: 2874

creating a triangular-shaped recess in the surface of said substrate. See col. 3 lines 28-59 and Figs 1-2. It would have been obvious to one of ordinary skill in the art to combine the teachings of Tiao et al and Bassous et al, thereby forming the tapered recesses in the integral guide/plate structure, thereby forming the device as seen in Figure 2 of Tiao et al, as Bassous et al discloses such an etching process, wherein a portion of the substrate is removed to form a desired geometry, as the process provides a high degree of control to form a desired geometry. See Bassous et al, col. 2 lines 3-11.

Pertaining to claims 4 and 15, Tiao et al in view of Tai et al discloses the device and method as described above. However, the combination of Tiao et al and Tai et al does not disclose the recesses being formed such that two adjacent tapered light guides are defined by a rounded shape. Tiao et al, as seen in Figure 2, shows two adjacent tapered light guides defined by a sharp-pointed triangular shape. Bassous et al, as described above, discloses the bottom of the recess in the silicon substrate may be rounded, thereby forming a pyramid-shaped recess with a rounded apex. See col. 3 lines 56-58 and Figs 1-2. It would have been obvious to one of ordinary skill in the art to form the recesses that two adjacent tapered light guides are defined by a rounded shape, as Bassous et al discloses the rounded-apex geometry reduces stress on the substrate. See Bassous et al, col. 3 lines 56-59.

Addressing claim 12, Tiao et al in view of Tai et al, in further view of Bassous et al disclose the display and method as described above. However, the combination of Tiao et al and Tai et al and Bassous et al does not disclose positioning an electrical

Art Unit: 2874

element between the tapered portion of the plate and the light emitters, or more specifically between the taper light guides and the light emitters. However, the disclosed types of light sources in Tiao et al, such as LEDs, OLEDs, laser diodes, etc, all require additional electrical elements, for example, to provide electrical power and/or control signals to the light emitter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to position an electrical element between the taper light guides and the light emitters, to provide the required electrical power and/or control signals to the light emitters.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 11, 13, 14, and 17 further rejected under 35 U.S.C. 102(b) as being anticipated by Tai et al (US 5,359,691).

Addressing claims 1 and 11, Tai et al discloses a method of forming an apparatus as seen in Figure 1 comprising: providing a light transmissive display 12, providing a light transmissive plate 14 so as to overlap with and be substantially parallel with the light transmissive display 12, providing one or more light emitters 64 and 64' adapted to emit light into the light transmissive plate 12, the light 30 and 30' received substantially parallel to a plane of a displaying surface of the light transmissive display 12, and providing one or more tapered light guides 28 and 28' between the one or more

light emitters 64 and 64' and the light transmissive plate 14. See Figure 1, col. 4 lines 27-41, and col. 5 lines 43-50.

Concerning claims 2, 3, 6, 13, 14, and 17, Tai et al discloses the method and resulting edge-lit apparatus as described above. In addition, Tai et al discloses each light guide 28 and 28' introduces light into a respective side 16 and 20 of the light transmissive plate 14 and each guide 28 and 28' extends along an entire respective side 16 and 20 of the light transmissive plate 14, wherein each light guide 28 and 28' is formed as a single monolithic element. See Figure 1, col. 4 lines 35-41. Each emitter 64 and 64' has a maximum diameter measured along its cross-section which is significantly smaller than, for example, the length of the light transmissive plate 14. See Figure 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda S. Peace whose telephone number is (571)272-8580. The examiner can normally be reached on M-F (8-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571) 272- 2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rhonda S. Peace/
Examiner, Art Unit 2874
May 18, 2009